

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-IV (NEW) EXAMINATION – SUMMER 2024

Subject Code:3142310

Date:08-07-2024

Subject Name: Injection Molding Technology

Time:10:30 AM TO 01:00 PM

Total Marks:70

Instructions:

- 1. Attempt all questions.**
- 2. Make suitable assumptions wherever necessary.**
- 3. Figures to the right indicate full marks.**
- 4. Simple and non-programmable scientific calculators are allowed.**

MARKS

- Q.1** (a) Define : (1) Injection Molding (2) Plasticizing capacity (3) Nozzle **03**
(b) Define : (1) L/D ratio (2) Compression ratio (3) Maximum Day-light (4) Helix angle **04**
(c) List advantages and disadvantages of Injection Molding. **07**
- Q.2** (a) List & Draw cycle of operation of Plunger type Injection Molding machine. **03**
(b) Calculate the Injection molding machine tonnage required for the following: Part dimension 60 x 30 x 30 cm. Material PP, Cavity Pressure for PP from graph: 756 bar, Gate: Direct Sprue. **04**
(c) List types of Nozzle. Explain any two with neat sketch. **07**
- OR**
- (c) Compare some characteristic of Hydraulic and Electrical drives for screw. **07**
- Q.3** (a) List types of Injection Molding Machine. Write specification of Injection Unit. **03**
(b) List Auxiliaries equipments used in Injection molding Plant. Draw and Explain about Cooling Tower. **04**
(c) Draw Screw for Injection Molding Machine. Label and Define various Screw terminologies. **07**
- OR**
- Q.3** (a) Explain about Fluid heated Barrel of Injection Molding of Thermoset Machine. **03**
(b) Describe in brief about Injection Molds for Thermoset material. **04**
(c) Compare: Injection Molding of Thermoplastic with Injection Molding of Thermoset. **07**
- Q.4** (a) List advantages of screw plasticizing. **03**
(b) Explain Ring type non returned valve Screw tip in brief with neat sketch. **04**
(c) Define Clamping. List various type of Clamping used in Injection molding machine. Explain any one with neat sketch. **07**
- OR**
- Q.4** (a) List and Explain Process variables for Injection Molding of Thermoset. **03**
(b) Explain in brief about Refrigerant used in the Chilling Plant. **04**
(c) In some Injection Molding Plants Chilling Plant used to chill the water and supply to the machines. **07**
Explain Principle and working of Chilling Plant with neat sketch.

- Q.5** (a) Find machine shot capacity of Injection molding having screw diameter 50 mm, Density of ABS/PC blend 1.15 g/cc, maximum refilling position 250 mm. **03**
- (b) Explain significance of Thermocouple in Injection Molding Explain in brief about working of Thermocouple. **04**
- (c) Explain reasons and remedies for the following faults of Injection Molding Process (1) Sink Mark (2) Weld Lines. **07**

OR

- Q.5** (a) Explain in brief Start-up, running and shut-down process of Injection molding machine. **03**
- (b) Explain about Metering Zone of screw in brief. **04**
- (c) Compare: Screw Type Molding Machine with Plunger Type Molding Machine. **07**
